

REMARKS

Miscellaneous Claim Amendments

Claim 3

Applicant amends claim 3 by inserting “abrasive crystals” to correct an antecedent basis problem with original claim language in claims 9-11. No new matter is added. The amendment has no effect on patentability.

Claims 9-11 and 21

Applicant removes the phrase “of particles” for clarity. No new matter is added. The amendments have no effect on patentability.

Claim Rejections – 35 USC § 112

Claims 4, 16, and 21

Claims 4, 16, and 21 are rejected in the Office Action under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant has amended claims 4, 16, and 21 for clarification. The phrases “having a fine particle size standard deviation of less than about six-tenths of an average fine particle size” and “having a coarse particle size standard deviation of less than about six-tenths of an average coarse particle size” are added to claims 4, 16, and 21. The phrase “wherein the average coarse particle size is different from the average fine particle size” is added to claims 4

and 16. Support for these amendments is found in paragraph [0010] and Figure 4. No new matter is added. These amendments overcome the Office Action 35 U.S.C. § 112 rejection. Applicant requests allowance of claims 4, 16, and 21.

Claim Rejections – 35 USC § 102/103

The Office Action has rejected claims 1-21 under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Hyun et al. (EP 0352811A, “Hyun”). Applicant respectfully disagrees.

Claim 1

Applicant has amended claim 1 to insert the word “sintered” before the word “polycrystalline” and the word “cubic”. Support for this amendment is found in paragraphs [0036] and [0025]. No new matter is added.

The Office Action maintains that Hyun discloses all the limitations of Applicant’s claims except that Hyun does not explicitly disclose a sum value of an impact resistance number and an abrasion resistance number greater than 19,000. The Office Action further maintains that this property is considered to be inherent to the composition of the material. The Office Action appears to maintain that the Applicant’s claimed composition and that of Hyun are substantially similar.

Applicant respectfully disagrees that the claimed compositions are similar. Applicant in claim 1 claims “sintered polycrystalline diamond or sintered cubic boron nitride” (emphasis added). A person of ordinary skill in the art understands that “sintered” used in this

context refers to a product which has direct bonds between the polycrystalline diamond particles or the cubic boron nitride (cBN) particles. There are no intervening materials between the bonded diamond or cBN particles. Applicant has further emphasized this in the amendments to claim 2. Support for this amendment is found, for example, in paragraph [0025].

Hyun is careful to make this distinction by stating that “(w)hile in the method of the present invention the bonds between the metal coatings of adjacent particles are formed by sintering, the resulting structure is termed “cemented” with respect to the superabrasive particles because they are bonded to the matrix support structure (*i.e., the bonded metal coatings*). (Hyun; page 4, lines 40-42; emphasis added by Applicant). In contrast, one skilled in the art recognizes that “sintering” refers to “the formation of diamond-diamond or CBN-CBN bonds under HPHT conditions” (Hyun; page 4, lines 42-43).

Therefore, Hyun teaches away from sintering by stating that “(b)y coating the superabrasive before forming the compact, the formation of self bonds between the superabrasive particles is essentially avoided. It is believed that diamond-diamond bonds are a cause of some of the problems with the prior art compacts, such as massive fracture under impact loading” (page 4, lines 30-34; emphasis added).

It is conclusively apparent that the composition of Hyun is different from that of Applicant’s “sintered” composition of claim 1 in that Hyun discloses that “there is provided a thermally stable superabrasive cutting element...The cutting element comprises a plurality of individually metal coated superabrasive particles wherein the metal coatings between adjacent particles are bonded to each other, forming a cemented matrix” (page 4, lines 1-4; emphasis added).

As indicated, Hyun teaches away from Applicant's claim 1 "sintered" abrasive layer. Further, on the basis of the disclosures in Hyun it is **surprising** and non-obvious that the tool insert of Applicant's claim 1 has the property of "a sum value of an impact resistance number and an abrasion resistance number greater than 19,000", since Hyun discloses that "diamond-diamond bonds are a cause of some of the problems with the prior art compacts, such as massive fracture under impact loading" (page 4, lines 30-34; emphasis added). According to Hyun, a "cemented matrix" bonded to the individual superabrasive particles is required to improve impact resistance.

Applicant has provided tangible evidence that the prior art composition of Hyun is not substantially similar to the composition of Applicant's claim 1. Therefore, the prior art composition does not necessarily possess characteristics of "a sum value of an impact resistance number and an abrasion resistance number greater than 19,000", as in Applicant's claim 1.

At least for the reasons stated above, Applicant's claim 1 is not anticipated nor made obvious by Hyun. Applicant's claim 1 is in condition for allowance, and Applicant request allowance of claim 1.

Claims 2-15

Since Applicant's claim 1 is in condition for allowance, all claims that depend directly or indirectly from claim 1, that is, Applicant's claims 2-15, are also in condition for allowance. Applicant requests allowance of claims 2-15.

Claim 21

Applicant has amended independent claim 21 to add the limitation “wherein the abrasive crystals are directly bonded to each other”. Support for this amendment is obvious to a person of ordinary skill in the art from paragraphs [0024] and [0025] and throughout the application. No new matter is added. As such, the arguments provided hereinabove for the allowability of claim 1 equally apply to claim 21. Therefore, claim 21 is in condition for allowance, and Applicant requests allowance of claim 21.

Claims 16

Applicant amends independent method claim 16 to include the limitation that the sintering step “result(s) in a direct bonding between abrasive crystals of the abrasive layer”. Support for this amendment is obvious to a person of ordinary skill in the art from paragraphs [0024] and [0025] and throughout the application. No new matter is added. Applicant maintains that this amendment is only necessary for clarification and does not affect patentability, since a person of ordinary skill in the art understands the “sintering” to inherently produce the result. Nevertheless, the amendment, together with the arguments presented above for claim 1, clearly distinguishes claim 16 from Hyun, and put claim 16 in condition for allowance. Applicant requests allowance of claim 16.

Claims 17-20

Since Applicant's claim 16 is in condition for allowance, all claims that depend directly claim 16, that is, Applicant's claims 17-20, are also in condition for allowance.

Applicant requests allowance of claims 17-20.

New Claims

Claims 22-23 are new. Support for these claims is found in paragraphs [0016] and [0041]. No new matter is added. Since claims 22-23 depend directly or indirectly from independent claims that are in a condition for allowance, Applicant requests allowance of claims 22-23.

Application No.: 10/553,644
Paper Dated: December 19, 2007
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CONCLUSION

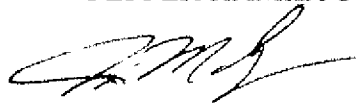
All of the stated grounds of rejection have been properly traversed, accommodated or rendered moot. Applicants, therefore, respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. There being no other rejections, Applicants respectfully request that the current application be allowed and passed to issue.

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Should the Examiner have any questions or comments, or need any additional information, he is invited to contact the undersigned at her convenience.

No fee is believed to be due for this submission. To the extent that fees may be required for this Amendment, the Commissioner is hereby authorized to debit Deposit Account 50-0436.

Respectfully submitted,
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A handwritten signature in black ink, appearing to read 'JMS', is written over the printed name of James M. Singer.

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